# STORMWATER MANAGEMENT PLAN

## EROSION CONTROL

BEFORE EARTHWORKS CAN COMMENCE THE EROSION & SEDIMENT CONTROL MEASURES MUST BE IN PLACE.

DURING THE CONSTRUCTION PERIOD, THESE CONTROL MEASURES WILL NEED TO BE INSPECTED & MAINTAINED REGULARLY, ESPECIALLY AFTER STORM EVENTS, BY THE CONTRACTOR.

ALL WORK IS TO BE CARRIED OUT TO PREVENT EROSION, CONTAMINATION & SEDIMENTATION OF THE STORAGE SITE, SURROUNDING AREAS & DRAINAGE SYSTEMS.

MINIMIZE DISTURBED AREA COVERED WITH NATURAL VEGETATION. ONLY THOSE AREAS DIRECTLY REQUIRED FOR CONSTRUCTION ARE TO BE DISTURBED.

INSTALL EROSION/SEDIMENT CONTROL MEASURES PRIOR TO COMMENCEMENT OF CONSTRUCTION OR EXCAVATION OPERATIONS.

PROVIDE SILT FENCE/STRAW BAIL BARRIERS TO THE LOW SIDE OF ALL EXPOSED EARTH EXCAVATIONS. TIE SEDIMENT FENCING MATERIAL TO CYCLONE WIRE SECURITY FENCE. SEDIMENT CONTROL FABRIC SHALL BE AN APPROVED MATERIAL (EG. HUMES PROPEX SILT STOP) STANDING 300mm ABOVE GROUND & EXTENDING 150mm BELOW GROUND.

ISOLATE EXISTING STORMWATER PITS WITH STRAW BALES OR SILT TRAPS TO FILTER ALL INCOMING FLOWS.

DO NOT STOCKPILE EXCAVATED MATERIAL ON THE ROAD WAY.

DIVERT CLEAN WATER FROM UNDISTURBED AREAS AROUND THE WORKING AREAS.

CONSTRUCTION ENTRY/EXIT SHALL BE VIA THE LOCATION NOTED ON THE DRAWING. CONTRACTOR SHALL ENSURE ALL DROPPABLE SOIL & SEDIMENT IS REMOVED PRIOR TO CONSTRUCTION TRAFFIC EXITING SITE. CONTRACTOR SHALL ENSURE ALL CONSTRUCTION TRAFFIC ENTERING AND LEAVING THE SITE DO SO IN A FORWARD DIRECTION.

TREAT THE STORMWATER RUNOFF WITH SUSPENDED SOLIDS SO THE DISCHARGE WATER QUALITY TO COUNCIL STORMWATER DRAINAGE SYSTEM HAS A MAXIMUM CONCENTRATION OF SUSPENDED SOLIDS THAT DOES NOT EXCEED 50 MILLIGRAMS PER LITRE IN ACCORDANCE WITH THE PROTECTION OF THE ENVIRONMENT OPERATION ACT (POEO 1997) AND SHALL BE APPROVED BY LOCAL COUNCIL

ADOPT TEMPORARY MEASURES AS MAY BE NECESSARY FOR EROSION & SEDIMENT CONTROL, INCLUDING BUT NOT LIMITED TO THE FOLLOWING: –
– DRAINS: TEMPORARY DRAINS AND CATCH DRAINS.
– SPREADER BANKS OR OTHER STRUCTURES: TO DISPERSE CONCENTRATED RUNOFF.
– SILT TRAPS: CONSTRUCTION AND MAINTENANCE OF SILT TRAPS TO PREVENT DISCHARGE OF SCOURED MATERIAL TO DOWNSTREAM AREAS.

AFTER RAIN, INSPECT, CLEAN, AND REPAIR IF REQUIRED, TEMPORARY EROSION & SEDIMENT CONTROL MEASURES.

REMOVE TEMPORARY EROSION & SEDIMENT CONTROL MEASURES WHEN THEY ARE NO LONGER REQUIRED.

COMPLY WITH THE REQUIREMENTS OF LANDCOM'S MANAGING URBAN STORMWATER – SOIL AND CONSTRUCTION 'THE BLUE BOOK' LATEST EDITION

THE EROSION & SEDIMENT CONTROL PLAN PROVIDED IS ONLY INDICATIVE. THE CONTRACTOR SHOULD PREPARE A DETAILED ESCP SUITABLE FOR THE SPECIFIC SITE CONDITIONS

DIAL BEFORE YOU DIG SHOULD BE CONTACTED PRIOR TO ANY EXCAVATION ON SITE

TM: TRADE MARK OF THE ASSOCIATION OF DIAL BEFORE YOU DIG SERVICES LTD. USED UNDER LICENSE.

## GENERAL NOTES

ALL WORK SHALL BE CARRIED OUT IN ACCORDANCE WITH COUNCIL'S REQUIREMENTS, BUILDING CODE OF AUSTRALIA, NSW CODE OF PRACTICE AND THE TO THE RELEVANT SERVICE CODES.

THESE DRAWINGS SHALL BE READ IN CONJUNCTION WITH ALL ARCHITECTURAL AND OTHER CONSULTANTS' DRAWINGS AND SPECIFICATIONS AND WITH SUCH OTHER WRITTEN INSTRUCTIONS AS MAY BE ISSUED DURING THE COURSE OF THE CONTRACT. ALL DISCREPANCIES SHALL BE REFERRED TO THE SUPERINTENDENT FOR DECISION BEFORE PROCEEDING WITH THE WORK.

ALL DIMENSIONS SHOWN ON THE DRAWINGS ARE IN MILLIMETERS (U.N.O.). DIMENSIONS SHALL NOT BE OBTAINED BY SCALING OF THESE DRAWINGS. USE FIGURED DIMENSIONS ONLY.

BENCHMARKS HAVE BEEN ESTABLISHED WHERE INDICATED ON THE DRAWINGS. ALL LEVELS ARE TO AUSTRALIAN HEIGHT DATUM (A.H.D.). THE CONTRACTOR SHALL UNDERTAKE ALL NECESSARY SURVEY WORK TO ENSURE THAT THE WORKS ARE CONSTRUCTED TO DESIGN LINE AND LEVEL.

SETTING OUT DIMENSIONS AND LEVELS SHOWN ON THE DRAWINGS SHALL BE VERIFIED BY THE CONTRACTOR.

ALL MATERIALS SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF THE RELEVANT SAA CODES AND THE BY–LAWS AND ORDINANCES OF THE RELEVANT BUILDING AUTHORITIES.

IT IS THE CONTRACTOR'S RESPONSIBILITY TO PROVIDE ALL SAFETY FENCES, WARNING SIGNS, TRAFFIC DIVERSIONS AND THE LIKE DURING CONSTRUCTION. ALL WORKS TO COMPLY WITH WORK HEALTH AND SAFETY REQUIREMENTS AND OTHER RELEVANT AUTHORITY SAFETY REQUIREMENTS.

NO TREES SHALL BE REMOVED, CUTBACK OR RELOCATED WITHOUT THE WRITTEN INSTRUCTION FROM THE SUPERINTENDENT.

WHERE NEW WORKS ABUT EXISTING THE CONTRACTOR SHALL ENSURE THAT A SMOOTH EVEN PROFILE, FREE FROM ABRUPT CHANGES IS OBTAINED.

ALL WORKS SHALL BE CARRIED OUT IN ACCORDANCE WITH THE DETAILS SHOWN ON THE DRAWINGS AND THESE SPECIFICATIONS.

DESIGN LEVELS GIVEN ARE TO FINISHED SURFACE LEVEL AND INCLUSIVE OF TOPSOIL. (TOPSOIL DEPTH VARIES)

THE CONTRACTOR SHALL ARRANGE ALL SURVEY SETOUT TO BE CARRIED OUT BY A N.A.T.A. REGISTERED SURVEYOR.

CARE IS TO BE TAKEN WHEN EXCAVATING NEAR EXISTING SERVICES. NO MECHANICAL EXCAVATIONS ARE TO BE UNDERTAKEN OVER TELECOMMUNICATIONS OR ELECTRICAL SERVICES. HAND EXCAVATE IN THESE AREAS.

THE LOCATIONS OF UNDERGROUND SERVICES SHOWN ON THE DRAWING HAVE BEEN PLOTTED FROM DIAGRAMS PROVIDED BY SERVICE AUTHORITIES. THIS INFORMATION HAS BEEN PREPARED SOLELY FOR THE AUTHORITIES OWN USE AND MAY NOT NECESSARILY BE UPDATED OR ACCURATE.

THE POSITION OF SERVICES AS RECORDED BY THE AUTHORITY AT THE TIME OF INSTALLATION MAY NOT REFLECT CHANGES IN THE PHYSICAL ENVIRONMENT SUBSEQUENT TO INSTALLATION.

MODULAR ENGINEERS DOES NOT GUARANTEE THAT THE SERVICES INFORMATION SHOWN ON THE DRAWING SHOWS MORE THAN THE PRESENCE OR ABSENCE OF SERVICES, AND WILL ACCEPT NO LIABILITY FOR INACCURACIES IN THE SERVICES INFORMATION SHOWN FROM ANY CAUSE WHATSOEVER.

IT IS THE CONTRACTOR'S RESPONSIBILITY TO OBTAIN FROM THE UTILITY SERVICES AUTHORITIES A CURRENT COPY OF UNDERGROUND SERVICES SEARCH FOR THE LOCATION OF ALL EXISTING SERVICES PRIOR TO COMMENCEMENT OF ANY WORK AND NOTIFY ANY CONFLICT WITH THE DRAWINGS IMMEDIATELY. CLEARANCE SHALL BE OBTAINED FROM THE RELEVANT REGULATORY AUTHORITY. CONTRACTOR TO KEEP COPY OF UNDERGROUND SERVICES SEARCH ON SITE AT ALL TIMES. ANY DAMAGES TO SERVICES OR SERVICES ADJUSTMENTS SHALL BE CARRIED OUT BY THE CONTRACTOR OR RELEVANT AUTHORITY AT THE CONTRACTOR'S EXPENSE.

VISIT THE SITE BEFORE SUBMITTING THE FINAL TENDER PRICE TO ASSESS 'ON SITE' CONDITIONS. FAILURE TO DO SO WILL FORFEIT ANY CLAIM FOR NOT BEING AWARE OF CONDITIONS AFFECTING THE TENDER.

THE CONTRACTOR SHALL PREPARE ACCURATE WORK–AS–EXECUTED DRAWINGS FOLLOWING THE COMPLETION OF ALL WORKS.

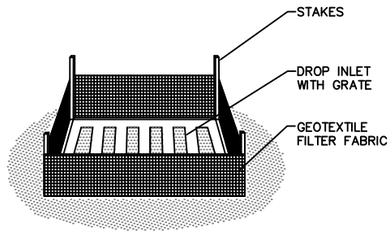
IT IS THE CONTRACTOR'S RESPONSIBILITY TO HAVE IN PLACE & MAINTAIN TRAFFIC FACILITIES AT ALL TIMES DURING CONSTRUCTION.

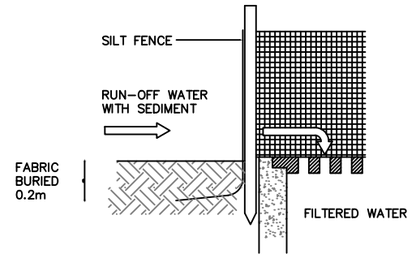
## LEGEND

| | |
|---|---|
| | DENOTED DOWN PIPE SPREADER |
| DP | DENOTES DOWN–PIPE |
| eDP | DENOTES EXISTING DOWN–PIPE |
| RWH | DENOTES RAINWATER HEAD WITH DOWN–PIPE |
| | DENOTES RAINWATER CHARGED LINE |
| | DENOTES STORMWATER 1% MIN. FALL GRAVITY LINE |
| | DENOTES STORMWATER SEALED CHARGE LINE |
| | DENOTES RAINWATER SEALED CHARGE LINE |
| | DENOTES ANTICIPATED ALIGNMENT OF EXISTING UNDERGROUND STORMWATER SYSTEM |
| | DENOTES SUBSOIL LINE |
| SW | DENOTES EXISTING STORMWATER LINE |
| S | DENOTES AUTHORITY SEWER LINE |
| | DENOTES SEDIMENT FENCE |
| CE | DENOTES CLEAR OUT EYE POINT |
| CE | DENOTES SEALED CLEAR OUT EYE POINT |
| | DENOTES GRATED SURFACE INLET PIT |
| | DENOTES GRATED TRENCH DRAIN |
| 00.00 | DENOTES PROPOSED SPOT LEVEL |
| | DENOTES EXISTING GRATED SURFACE INLET PIT |
| | DENOTES EXISTING JUNCTION PIT |
| | DENOTES EXISTING KERB INLET PIT |
| eTEL | DENOTES EXISTING TELSTRA PIT |
| eHYD | DENOTES EXISTING HYDRANT |
| eSV | DENOTES EXISTING STOP VALVE |
| eGAS | DENOTES EXISTING GAS VALVE |
| ePP | DENOTES EXISTING POWER POLE |
| eSMH | DENOTES EXISTING SEWER MANHOLE |
| OFP | DENOTES OVERLAND FLOW PATH |

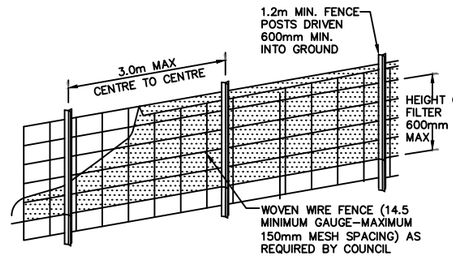
## ABBREVIATIONS

| | |
|---|---|
| ø/DIA | DENOTED DIAMETER |
| CBR | DENOTED CALIFORNIA BEARING RATIO |
| CH | DENOTED CHAINAGE |
| CL | DENOTED CENTER LINE |
| CO | DENOTED CLEAR OUT |
| DD | DENOTES DISH DRAIN |
| DDO | DENOTES DISH DRAIN OUTLET |
| RCP | DENOTES REINFORCED CONCRETE PIPE |
| DP | DENOTES DOWNPIPE |
| ext | DENOTES EXISTING |
| FFL | DENOTES FINISHED FLOOR LEVEL |
| GTD | DENOTES GRATED TRENCH DRAIN |
| GSIP | DENOTES GRATED SURFACE INLET PIT |
| HYD | DENOTES HYDRANT |
| IJ | DENOTES ISOLATING JOINT |
| IL | DENOTES INVERT LEVEL |
| IP | DENOTES INTERSECTION POINT |
| KIP | DENOTES KERB INLET PIT |
| KO | DENOTES KERB OUTLET |
| K&G | DENOTES KERB & GUTTER |
| KR | DENOTES KERB RETURN |
| LS | DENOTES LONGITUDINAL SECTION |
| NGL | DENOTES NATURAL GROUND LEVEL |
| OFP | DENOTES OVERLAND FLOW PATH |
| OSD | DENOTES ON–SITE DETENTION |
| R | DENOTES RADIUS |
| RL | DENOTES REDUCED LEVEL |
| RW | DENOTES RETAINING WALL |
| RWT | DENOTES RAINWATER TANK |
| SJ | DENOTES SAWN CONTROL JOINT |
| SMH | DENOTES SEWER MAN HOLE |
| SW | DENOTES STORMWATER |
| SWP | DENOTES STORMWATER PIT |
| SWRM | DENOTES STORMWATER RISING MAIN |
| SV | DENOTES STOP VALVE |
| TOK | DENOTES TOP OF KERB |
| TOW | DENOTES TOP OF WALL |
| TWL | DENOTES TOP WATER LEVEL |
| TP | DENOTES TANGENT POINT |
| UPVC | DENOTES UNPLASTICISED POLYVINYL CHLORIDE |
| UNO | DENOTES UNLESS NOTED OTHERWISE |
| FF | DENOTES FIRST FLUSH DEVICE |
| TYP | DENOTES TYPICAL |

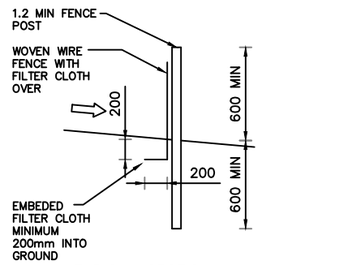



SUMP SEDIMENT TRAP
NOT TO SCALE

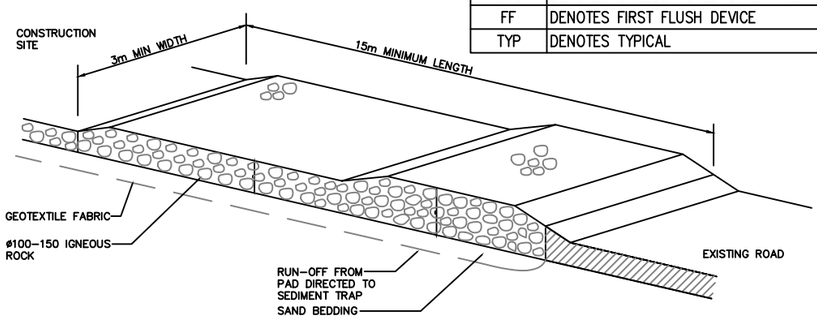



DIAGRAMMATIC VIEW




TYPICAL SECTION

SEDIMENT FENCE DETAIL
NOT TO SCALE




TEMPORARY CONSTRUCTION EXIT (RUBBLE ALTERNATIVE)
NOT TO SCALE

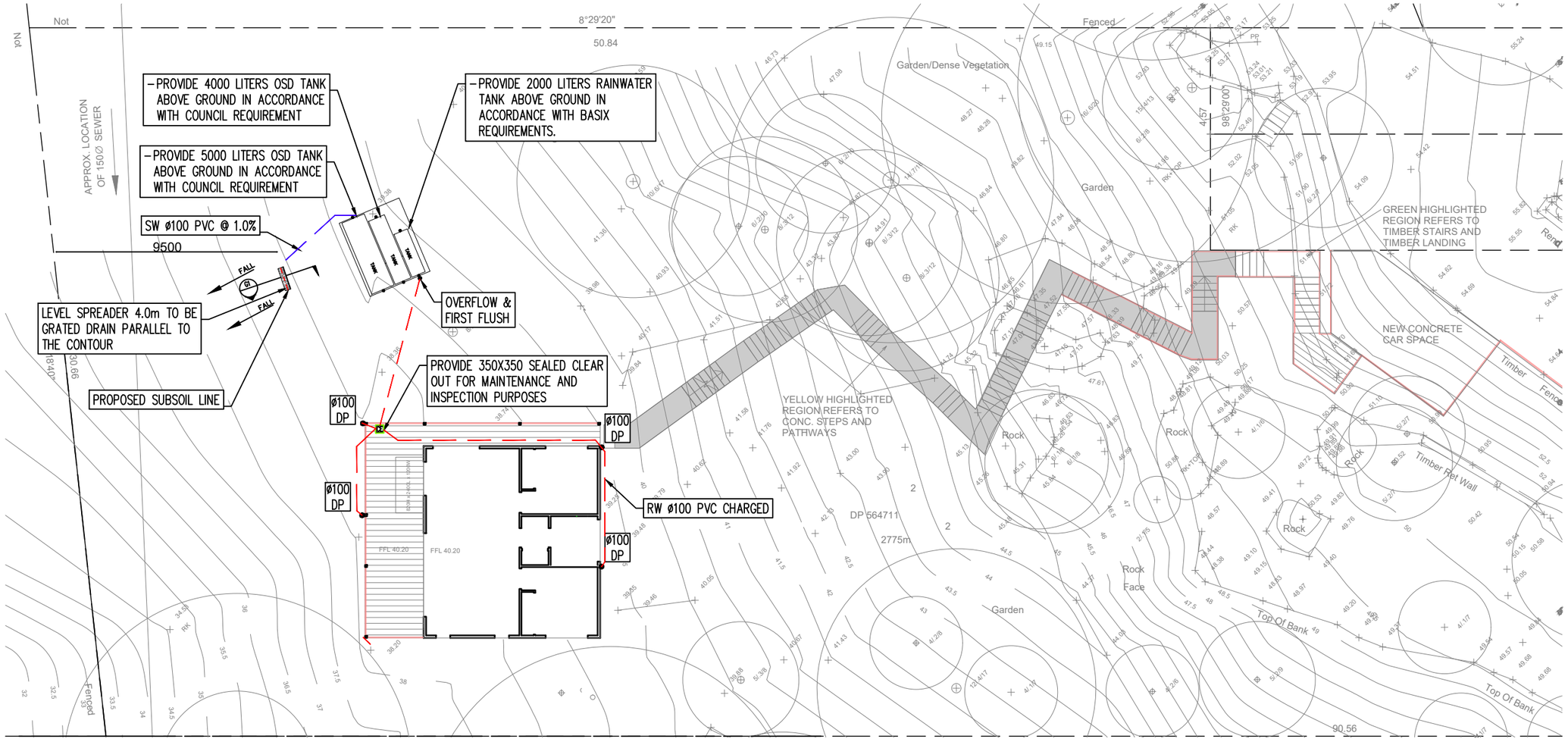
SIZE: A3 0 10 20 30 40 50 60 70 80 90 100 110 120

| REVISIONS | | | | | APPROVED BY |
|---|---|---|---|---|---|
| REV. | DATE | DESCRIPTION | D.P.ENG. | DFT. | ALI AL-OBAIDI |
| A | 14–JAN–2024 | ISSUED FOR CDC | S.R. | S.R. | MSc, BSc, MIEAust,CPEng,NER,NPER (No: 5358554), RPEQ(28316), PE(Victoia)No.0007689, PDP0000072, PRE0000191, DEP0000203 |
| B | 31–JAN–2024 | ISSUED FOR CDC | S.R. | S.R. | |
| C | 12–JUN–2025 | ISSUED FOR CDC | S.R. | S.R. | |
| | | | | | |

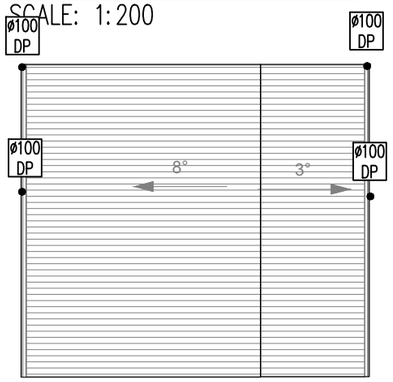
MODULAR ENGINEERS PTY LTD

MODULAR ENGINEERS pty ltd
A 6/7 PARKES STREET,PARRAMATTA NSW 2150
T 02 873 08473
M 04 208 98999
E info@modularengineers.com.au
ABN 66 646 960 929

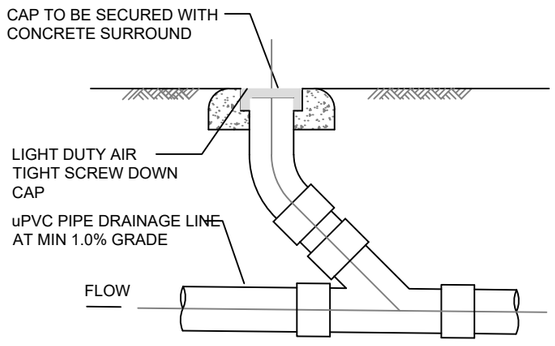

| | |
|---|---|
| PROJECT TITLE : | PROPOSED CONSTRUCTION OF A SECONDARY DWELLING |
| PROJECT ADDRESS : | 111 WOORARRA AVENUE ELANORA HEIGHTS |
| PROJECT NO. : | STW320–2024 |
| DRAWING TITLE : | TITLE PAGE, GENERAL NOTES, AND DETAILS–1 |
| DRAWING NO. : | STW001 |
| ISSUE DATE : | 14–JAN–2024 |



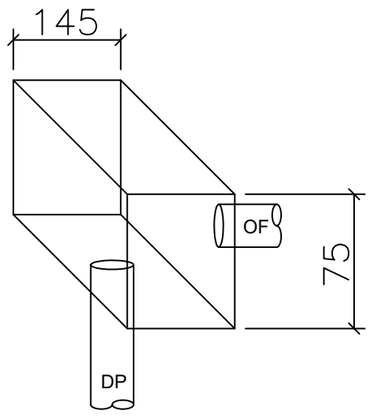

## STORMWATER FLOOR PLAN
SCALE: 1:200




## STORMWATER ROOF PLAN
SCALE: 1:200




CLEANING EYE PIT
N.T.S




TYPICAL BOX GUTTER DETAIL
N.T.S

| PIPE SCHEDULE | | | | |
|---|---|---|---|---|
| TAG | SIZE | MATERIAL | GRADE | TYPE |
| A | DAI.100 | P.V.C. | MIN. 1% | GRAVITY |
| B | DAI.150 | P.V.C. | MIN. 1% | GRAVITY |
| X | DAI.100 | P.V.C. | CHARGE | TO RWT/PIT |
| D | 200X100 | GALV. STEEL | MIN. 1% | TO KERB |
| E | EXISTING | EXISTING | EXISTING | EXISTING |

NOTES:

DRAINAGE

A. ALL PIPES TO BE LAID ON 75mm SAND BED WITH THE BARRELS FULLY SUPPORTED
B. 100mm AND 150mm DIAMETER PIPES TO BE LAID ON MINIMUM 1% GRADE
C. MINIMUM DEPTH OF COVER FOR PIPES NOT SUBJECT TO VEHICULAR LOADING TO BE 300mm
D. ALL DRAINAGE PIPES LAID UNDER PAVEMENT SHALL BE REINFORCED CONCRETE WITH RUBBER RING JOINTS
E. BACKFILL TRENCHES WITH COMPACTED SAND OR APPROVED AGGREGATE MATERIAL
F. ALL PITS TO HAVE 600x600mm INTERNAL DIMENSIONS (U.N.O.)
G. SILT ARRESTORS TO HAVE 900x900mm INTERNAL DIMENSIONS
H. HEAVY DUTY GALV. STEEL GRATES AND COVERS ARE TO BE PROVIDED IN TRAFFICABLE AREAS
I. HEEL & WHEELCHAIR SAFE GRATE COVERS ARE TO BE PROVIDED IN PEDESTRIAN AREAS
J. PIT GRATE TO BE TYPE WELDLOK OR APPROVED EQUIVALENT
K. ALL PITS GREATER THAN 900mm DEEP SHALL BE PROVIDED WITH A CHILD-PROOF LOCKING CLIP
L. ALL PITS SHALL BE MAINTAINED REGULARLY
M. ALL PITS TO BE BENCHED MIN. 20mm TO INVERT OF OUTLET
N. ø100 SUBSOIL DRAINAGE PIPE WRAPPED IN FABRIC SOCK TO BE PROVIDED IN ALL LANDSCAPED AREAS & BEHIND RETAINING WALLS AND CONNECTED TO THE NEAREST STORMWATER PIT.
O. COMPRESSIVE STRENGTH $f'_c$ FOR CAST IN SITU CONCRETE TO BE A MINIMUM OF 20MPa AT 28 DAYS
P. PROVIDE CLEANING EYES TO ALL DOWNPIPES NOT DIRECTLY CONNECTED TO PITS
Q. ISOLATED JOINTS TO BE PROVIDED TO ISOLATE CONCRETE PAVEMENTS FROM PITS
R. ALL TRENCH GRATES PROVIDED SHALL HAVE A MINIMUM CLEAR WIDTH OF 200mm
S. STORMWATER DRAINAGE CONNECTIONS TO THE MAIN SYSTEM SHALL BE TO THE REQUIREMENTS AND THE SATISFACTION OF LOCAL COUNCIL

UPPER LEVEL

A. INSTALL ø65mm uPVC SPITTER PIPES 20mm ABOVE SURFACE LEVEL FOR BALCONY AND CONCRETE ROOF AREAS TO ALLOW FOR EMERGENCY OVERFLOW INCASE OF BLOCKAGES DURING HEAVY STORMS. PLUMBER TO CONFIRM LOCATION DURING CONSTRUCTION.
B. BALCONY, TERRACE & CONCRETE ROOF AREAS TO BE FITTED WITH RAINWATER OUTLETS AND CONNECTED TO NEAREST DOWNPIPE WHERE REQUIRED (TYP).
C. DOWNPIPES (DP) SHOWN ON PLAN ARE TO BE ø100mm uPVC OR 100x75 U.N.O. (TYP).
D. CHARGED DOWNPIPES SHOWN ON PLAN MUST BE SEWER GRADE ø100mm uPVC WITH ALL JOINTS SOLVENT WELDED TO A LEVEL 1200mm ABOVE THE RAINWATER TANK INLET R.L. (TYP).
E. PROPOSED DOWNPIPE LOCATIONS ARE NOMINAL AND TO BE CONFIRMED DURING CONSTRUCTION (TYP).
F. INSTALL DOWNPIPE WITH SPREADER PIPE (SP) (IF REQUIRED) TO DISPERSE STORMWATER ONTO LOWER ROOF AREAS EFFECTIVELY.

SIZE: A3 0 10 20 30 40 50 60 70 80 90 100 110 120

| REVISIONS | | | | | APPROVED BY |
|---|---|---|---|---|---|
| REV. | DATE | DESCRIPTION | D.P.ENG. | DFT. | ALI AL-OBAIDI |
| A | 14-JAN-2024 | ISSUED FOR CDC | S.R. | S.R. | MSc, BSc, MIEAust,CPEng,NER,NPER (No: 5358554), RPEQ(28316), PE(Victoia)No.0007689, PDP0000072, PRE0000191, DEP0000203 |
| B | 31-JAN-2024 | ISSUED FOR CDC | S.R. | S.R. | |
| C | 12-JUN-2025 | ISSUED FOR CDC | S.R. | S.R. | |
| | | | | | |

MODULAR ENGINEERS PTY LTD

MODULAR ENGINEERS pty ltd
A 6/7 PARKES STREET,PARRAMATTA NSW 2150
T 02 873 08473
M 04 208 98999
E info@modularengineers.com.au
ABN 66 646 960 929



| | |
|---|---|
| PROJECT TITLE : | PROPOSED CONSTRUCTION OF A SECONDARY DWELLING |
| PROJECT ADDRESS : | 111 WOORARRA AVENUE ELANORA HEIGHTS |
| PROJECT NO. : | STW320-2024 |
| DRAWING TITLE : | STORMWATER DESIGN PLANS |
| DRAWING NO. : | STW002 |
| ISSUE DATE : | 14-JAN-2024 |

# DESIGN NOTES:

THE SITE IS LOCATED IN NOTHERN BEACHES COUNCIL.

SITE AREA = 2775 $m^2$ (BY CALC'S)

THE DEVELOPMENT CONSISTS OF THE CONSTRUCTION OF A DETACHED SECONDARY DWELLING.

INCREASE IN IMPERVIOUS AREA = 68.8$m^2$

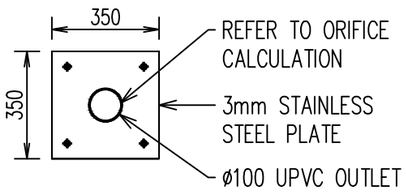
THE INCREASE IN NEW DEVELOPMENT IMPERVIOUS AREA IS >100–150 SQM; THEREFORE OSD OF 9000L IS REQUIRED AS PER SECTION TABLE 7 OF THE WATER–MANAGEMENT–DEVELOPMENT–POLICY–AUG2020

ALL NEW STORMWATER PIPES TO HAVE A MINIMUM OF 100mm CONCRETE OR 300mm TOPSOIL COVER U.N.O.

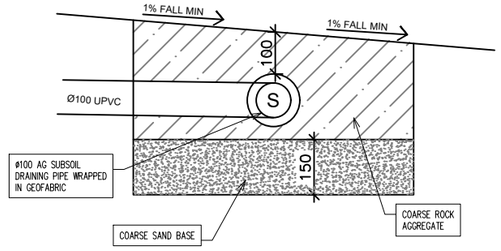
RAINWATER TANK TO BE EQUIPPED WITH FIRST FLUSH AND MOSQUITO PROTECTION DEVICES (REFER DETAIL).

LOCATION RAINWATER TANK SHOWN ON PLAN IS INDICATIVE. TO BE CONFIRMED DURING CONSTRUCTION.

ALL STORMWATER PIPES ARE TO BE A MINIMUM OF 600mm CLEAR FROM EXISTING SEWER LINE (TYP).




TYPICAL ORIFICE PLATE ELEVATION
NOT TO SCALE




SECTION G1
SCALE -
PERFORATED PIPE LEVEL SPREADER

| | | |
|---|---|---|
| water tank level (h)= | 1.82 | m |
| total Discharge area | 116 | m2 |
| Permissible Site Discharge(PSD)=Q= | 4 | L/s |
| √2*G*h= | 5975.651 | mm |
| Discharge coefficient Cd= | 0.6 | |
| Q= Cd*A*√2*G*h | 4000000 | |
| A=∏/4*D^2=√(Q/Cd*√2*G*h) | 1115.639 | mm2 |
| DIAMETER(D) | 37.70998 | mm |
| ORIFICE SIZE= | 38 | mm |

northern beaches council

**Table 7 Requirements for Size and Allowable Discharge from On-Site Detention Systems**

| Additional Hard (Impervious) Surface Area (square metres) | Minimum Capacity of On-Site Detention Tank (Litres) | Discharge Rate Litres/Sec |
|---|---|---|
| 0 -50 | Nil | Nil |
| >50 - 75 | 4,500 | 2 |
| >75 - 100 | 6,000 | 3 |
| >100 - 150 | 9,000 | 4 |
| >150 - 200 | 12,000 | 6 |
| >200 - 250 | 15,000 | 7 |
| >250 - 300 | 18,000 | 9 |
| >300 - 400 | 24,000 | 12 |
| >400 - 500 | 30,000 | 15 |
| >500 - 600 | 36,000 | 18 |
| >600 - 700 | 42,000 | 21 |
| >700 - 800 | 48,000 | 24 |
| >800 - 900 | 54,000 | 27 |
| >900 - 1,000 | 60,000 | 30 |
| >1,000* | A minimum storage capacity of 60 liters per $m^2$ of additional hard/impervious surface area, and a discharge rate which replicates the discharge from the site were it to be undeveloped. | |

| LEVEL SPREADER CALCULATION : | | |
|---|---|---|
| **1.PEAK FLOW** | | |
| RAINFALL INTENSITY (For 50 years 5min Storm) (I)= | 233 | mm/hr |
| Discharge coefficient (Cd)= | 1 | (ROOF) |
| ROOF AREA (A): | 116 | m2 |
| Q = C I A = | 7.51 | L/s |
| **2. LENGTH OF LEVEL SPREADER** | | |
| DOWN SLOPE GROUND COVER | HICKET (SHRUBS, GRASS) | |
| VELOCITY AT LEVEL SPREADER = | 0.405 | m/s |
| "EQUIVALENT" WATER HEIGHT OVER LEVEL SPREADER, X= | 0.0176 | m |
| V | GRASS & THICKET | |
| L=Q/(XxV)= | 0.32 | m |
| USED LENGTH = | 1.00 | m |
| **3.NUMBER OF LEVEL SPREADERS(N/S)** | | |
| GROUND COVER WITH SLOPE FROM LEVEL SPREADER TO TOP OF STREAM BANK | GRASS WITH >25% SLOPE | |
| EFFECTIVE DISTANCE Ed(m) = | 5 | m |
| RIPARIAN BUFFER WIDTH(W) | 3 | m |
| N/S=W/Ed | 0.6 | |
| USED | 1 | |

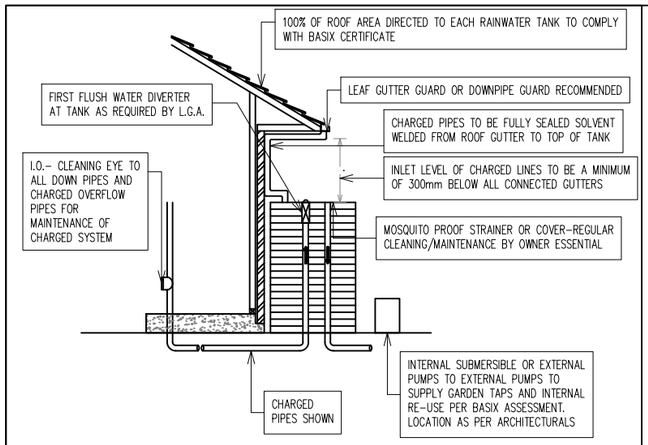
SIZE: A3 0 10 20 30 40 50 60 70 80 90 100 110 120

| REVISIONS | | | | | APPROVED BY |
|---|---|---|---|---|---|
| REV. | DATE | DESCRIPTION | D.P.ENG. | DFT. | ALI AL-OBAIDI |
| A | 14–JAN–2024 | ISSUED FOR CDC | S.R. | S.R. | MSc, BSc, MIEAust,CPEng,NER,NPER (No: 5358554), RPEQ(28316), PE(Victoia)No.0007689, PDP0000072, PRE0000191, DEP0000203 |
| B | 31–JAN–2024 | ISSUED FOR CDC | S.R. | S.R. | |
| C | 12–JUN–2025 | ISSUED FOR CDC | S.R. | S.R. | |
| | | | | | |

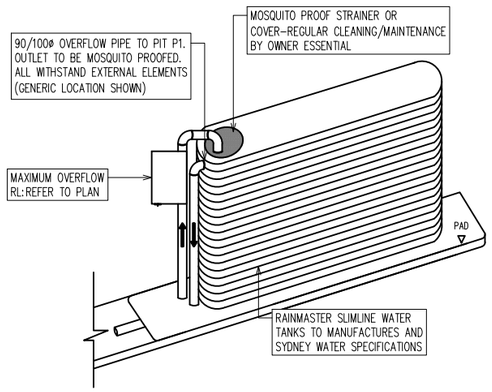
MODULAR ENGINEERS PTY LTD

MODULAR ENGINEERS pty ltd
A 6/7 PARKES STREET,PARRAMATTA NSW 2150
T 02 873 08473
M 04 208 98999
E info@modularengineers.com.au
ABN 66 646 960 929

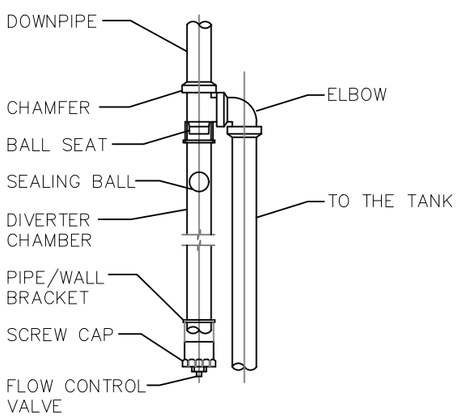

| | |
|---|---|
| PROJECT TITLE : | PROPOSED CONSTRUCTION OF A SECONDARY DWELLING |
| PROJECT ADDRESS : | 111 WOORARRA AVENUE ELANORA HEIGHTS |
| PROJECT NO. : | STW320–2024 |
| DRAWING TITLE : | STORMWATER DETAILS AND NOTES |
| DRAWING NO. : | STW003 |
| ISSUE DATE : | 14–JAN–2024 |




TYPICAL RAIN WATER TYPICAL RAINWATER RE-USE TANK CONFIGURATION
NOT TO SCALE




TYPICAL WATER TANK
NOT TO SCALE




FIRST FLUSH DIVERTER
SCALE: 1:20

| INTEGRATED TANK | INSERT |
|---|---|
| Width | 620 |
| Length | 2000 |
| Height | 2170 |
| RWT volume | 2 |
| OSD Volume | 0 |
| Height of RWT | |
| Height of OSD | |
| TOP TANK LEVEL | 41.57 |
| RWT TWL | 41.37 |
| RWT base water level | 39.4 |
| MIN RL | 39.2 |

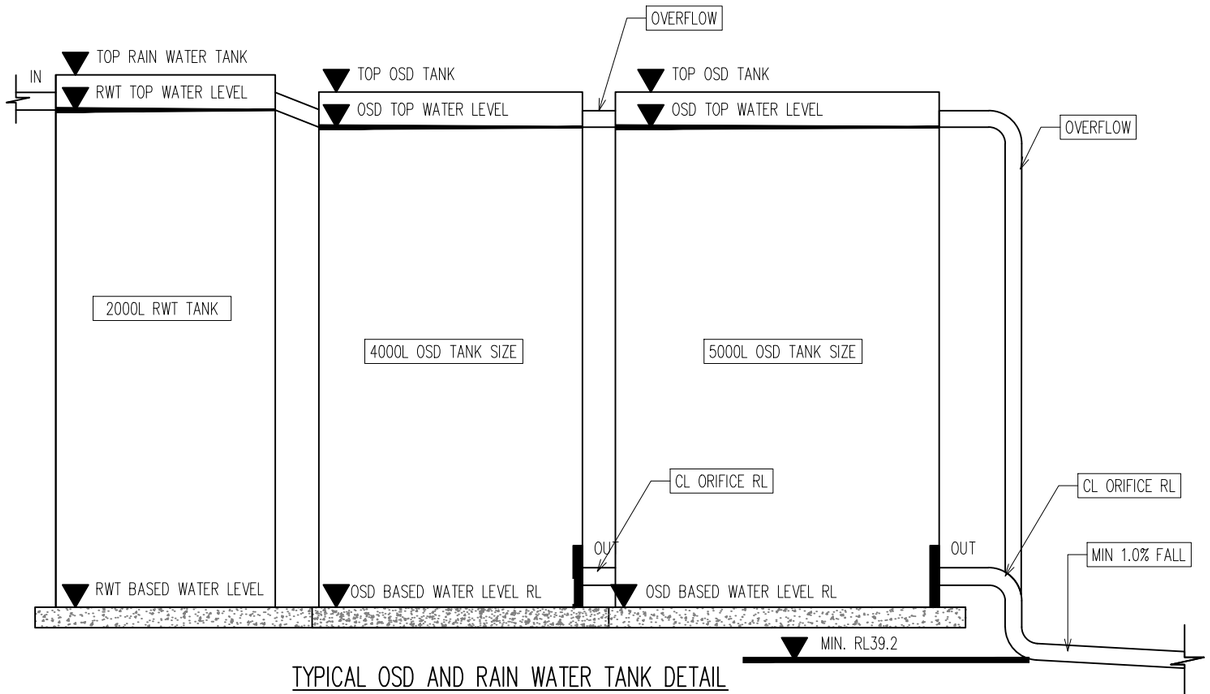
2000L RWT TANK LEVELS

| INTEGRATED TANK | INSERT |
|---|---|
| Width | 935 |
| Length | 2945 |
| Height | 2020 |
| RWT volume | 0 |
| OSD Volume | 4 |
| Height of RWT | |
| Height of OSD | |
| TOP TANK LEVEL | 41.42 |
| OSD TWL | 41.22 |
| RWT TWL/ CL ORIFICE | 39.45 |
| RWT base water level | 39.4 |
| MIN RL | |

4000L OSD TANK LEVELS

| INTEGRATED TANK | INSERT |
|---|---|
| Width | 1040 |
| Length | 3520 |
| Height | 2020 |
| RWT volume | 0 |
| OSD Volume | 5 |
| Height of RWT | |
| Height of OSD | |
| TOP TANK LEVEL | 41.42 |
| OSD TWL | 41.22 |
| RWT TWL/ CL ORIFICE | 39.45 |
| RWT base water level | 39.4 |
| MIN RL | 39.2 |

5000L OSD TANK LEVELS




TYPICAL OSD AND RAIN WATER TANK DETAIL
NOT TO SCALE

SIZE: A3 0 10 20 30 40 50 60 70 80 90 100 110 120

| REVISIONS | | | | | APPROVED BY |
|---|---|---|---|---|---|
| REV. | DATE | DESCRIPTION | D.P.ENG. | DFT. | ALI AL-OBAIDI |
| A | 14-JAN-2024 | ISSUED FOR CDC | S.R. | S.R. | MSc, BSc, MIEAust,CPEng,NER,NPER (No: 5358554), RPEQ(28316), PE(Victoia)No.0007689, PDP0000072, PRE0000191, DEP0000203 |
| B | 31-JAN-2024 | ISSUED FOR CDC | S.R. | S.R. | |
| C | 12-JUN-2025 | ISSUED FOR CDC | S.R. | S.R. | |
| | | | | | |

MODULAR ENGINEERS PTY LTD

MODULAR ENGINEERS pty ltd
A 6/7 PARKES STREET,PARRAMATTA NSW 2150
T 02 873 08473
M 04 208 98999
E info@modularengineers.com.au
ABN 66 646 960 929


| | |
|---|---|
| PROJECT TITLE : | PROPOSED CONSTRUCTION OF A SECONDARY DWELLING |
| PROJECT ADDRESS : | 111 WOORARRA AVENUE ELANORA HEIGHTS |
| PROJECT NO. : | STW320-2024 |
| DRAWING TITLE : | STORMWATER DETAILS AND NOTES |
| DRAWING NO. : | STW004 |
| ISSUE DATE : | 14-JAN-2024 |